ACALANES UNION HIGH SCHOOL DISTRICT
1212 Pleasant Hill Road, Lafayette, CA 94549

BOARD AGENDA BACKUP

Board Meeting Date:	May 17, 2006
Item:	**Initial Study / Negative Declaration Tennis Court Lighting Project for Acalanes High School**
	Staff Report ☐ **Discussion** ☐ **Action** ☒
Overview:	Consistent with the California Environmental Quality Act (CEQA) statues and guidelines, an initial study/negative declaration has been completed for the Acalanes High School Tennis Court Lighting Project. Staff contracted with Mills Associates of Lafayette to assist in analyzing the possible environmental impacts of the planned tennis court lighting project at Acalanes High School. Based on the analysis, staff has determined that there is less than a significant effect on the environment and that a negative declaration has been prepared. Public participation is an essential part of the CEQA process. Therefore, a letter notifying the public of the availability of a draft negative declaration has been prepared and will be posted in the local newspaper. The notice will also be sent to all local public agencies, adjacent property owners and the State Clearinghouse. The CEQA statues and guidelines require that the public have an opportunity to review the project and submit comments for a 30-day period. The review period for comments ends on June 20, 2006. A public hearing on June 26, 2004, will be held to receive comments from the public who were unable to submit their written comments. Once the review period is complete, responses to all written comments will be included in the final Mitigated Negative Declaration. Staff will then request the Governing Board to certify the final Mitigated Negative Declaration. The Public Notice of Availability and draft Negative Declaration is included.

Recommendation:	Staff recommends the Governing Board accept the Initial Study/Negative Declaration for the Tennis Court Lighting Project at Acalanes High School and to have a Public Hearing on the project on June 26, 2006.
Amount:	N/A
Funding Source(s):	
Budgeted:	Yes: No:
Prepared by:	Dave Humphrey Director of Facilities
Reviewed by Signature:	Christopher J. Learned Assistant Superintendent Business Services
Superintendent's Signature:	Jim Negri, Superintendent

Exhibit:	XI-H
Meeting Date:	05/17/06
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Acalanes Union High School District
FACILITIES DEVELOPMENT
310 Moraga Road, Moraga, CA 94556
925-376-6200 ♦ Fax 925-376-4366

PUBLIC NOTICE OF AVAILABILITY

DATE: May 17, 2006

TO: Interested Public Agencies, Organizations and Individuals

FROM: Dave Humphrey, Director of Facilities

RE: **Negative Declaration Review for Tennis Court Lighting Project at Acalanes High School located at 1200 Pleasant Hill Road, Lafayette, CA 94549**

Public Agencies and Organizations: The attached draft Negative Declaration dated May 2006 is being forwarded to you for review and comments.

Individuals: The draft Negative Declaration dated May 2006 and copies of supporting documents are available for review at the Acalanes Union High School District office, 1212 Pleasant Hill Road, Lafayette, CA 94549 and at AUHSD Service Center located at 310 Moraga Road, Moraga, CA 94556.

A public hearing before the Governing Board to consider the adoption of the Negative Declaration has been scheduled for June 26, 2006. The posting period has been established from May 19, 2006 through June 20, 2006. Your written comments would be appreciated prior to June 13, 2006 or may be submitted verbally during the public hearing.

Submit comments to: Acalanes Union High School District, Dave Humphrey, 310 Moraga Road, Moraga, CA 94556. On the front of the envelope in the bottom left hand corner please write: CEQA Comments - AHS 2006.

Please contact Dave Humphrey, Director of Facilities if you have any questions or comments regarding this matter (925) 280-3960 x 5903.

INITIAL STUDY/
NEGATIVE DECLARATION
TENNIS COURT LIGHTING PROJECT
ACALANES HIGH SCHOOL

Prepared for
Acalanes Union High School District

Prepared by
Mills Associates
Lafayette, California

May, 2006

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Environmental Checklist

1. Project title: Acalanes High School Tennis Court Lighting Project
2. Lead agency name and address: Acalanes Union High School District
   1212 Pleasant Hill Road
   Pleasant Hill, CA 94549
3. Contact person and phone number: Dave Humphrey, Director of Facilities
   (925) 278-6200
4. Project location: 1200 Pleasant Hill Road, Lafayette, CA 94549
5. Project sponsor's name and address: Acalanes Union High School District
6. General plan designation: Community Facilities & Civic Uses
7. Zoning: R-10 (Residential, 10,000 s.f.)
8. Description of project: Due to public requests to allow nighttime utilization of the existing six tennis courts at Acalanes High School, the school district is proposing to install a lighting system to meet the public need. Currently, the tennis courts are not lighted. The existing configuration of the tennis courts is three and three with the upper courts elevated approximately four feet higher than the lower courts. The tennis courts are located adjacent to Pleasant Hill Road. (Refer to Figures 1 and 2 for project location.)

   The school district is proposing to install six (6) light poles with fixtures specifically designed for tennis court play at Acalanes High School. The light poles will be at a height of fifty feet. There will be four corner light poles, two at the upper courts and two at the lower courts with three light fixtures on each pole. Two light poles will be located at the outside mid court with six fixtures on each pole, three facing the upper courts and three facing the lower courts. (Refer to Figures 3, 4, and 5.)

   The lighting system will be placed on a manual override system and/or time clock. The upper and lower courts will utilize a separate activation system, allowing independent use of either the upper or lower courts.

9. Surrounding land uses and setting: School district offices and single-family residences to the north; playing fields to the east, high school classrooms to the south, and Pleasant Hill Road and open space to the west.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement): State Architect's Office

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

√	Aesthetics		Agriculture Resources		Air Quality
	Biological Resources		Cultural Resources	√	Geology / Soils
	Hazards & Hazardous Materials		Hydrology / Water Quality		Land Use / Planning
	Mineral Resources		Noise		Population / Housing
	Public Services		Recreation		Transportation / Traffic
	Utilities / Service Systems		Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

—— I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

√ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

—— I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

—— I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

—— I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Dave Humphrey

Signature Dave Humphrey, Director of Facilities

May 10, 2006

Date

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EVALUATION OF ENVIRONMENTAL IMPACTS:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. **AESTHETICS** — Would the project:				
a) Have a substantial adverse effect on a scenic vista?				√
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				√
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			√	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		√		

Discussion:

a) As shown in the aerial photo in Figure 2, the tennis court lights would not have an adverse effect on a scenic vista. The lights will be located on the tennis courts, which are screened by a line of mature oak trees. There are no designated scenic vistas in the near vicinity of the tennis courts.

b) Because there are no scenic resources in the near vicinity of the project site, the lights would not substantially damage trees, rock outcroppings or historic buildings within a state scenic highway. The project site is located approximately one-quarter mile from a state highway.

c) The tennis court lights would not degrade the existing visual character or quality of the site. As stated above, the lights would be screened from the roadway by the row of mature oak trees. In addition, the lights will become a part of a developed high school site.

d) Zeiger Engineers, Inc. conducted a lighting study to determine the extent of light trespass that could occur with installation of the proposed lights. The proposed lighting system uses a total of six, 50-foot poles and a total of 24, 1500-watt fixtures. This plan allows for the most economical and efficient solution for the lighting system, achieving the minimum number of poles, lowest connected power, and lowest annual maintenance cost.

Light Fixtures – The proposed light fixtures use 1500-watt metal halide lamps, and have aluminum finishes with glare control shields, as illustrated in the manufacturer's product brochure in Appendix A. The fixtures are approximately 23 inches in diameter with an optical system that allows precise beam control. The fixtures are aimed downward toward the courts, designed to maximally redirect light toward the court by the special nature of their internal reflector system and through the use of external louvers and shields.

Light Poles – The light poles would be fabricated from galvanized steel and be 50 feet high. The selection of pole height was based on the need to provide adequate illumination at an economical

cost, and to provide sufficient height so as to allow downward aiming control to satisfactorily mitigate spill light toward residential properties adjacent to the school. The configuration of the poles and light fixture clusters are illustrated in Figure 4.

Lighting Criteria – The lighting system is designed to meet the United States Tennis Association (USTA) Class III (high school instructional, and parks) criteria. The lights provide a maintained average horizontal illuminance of approximately 50 footcandles[1], and a maintained minimum horizontal illuminance of 40 footcandles. This level is appropriate given the expected competitive level of play by the tennis court users.

A computer analysis of the proposed lighting system was prepared and is found in Appendix A. These results indicate an average constant value of 51 footcandles and a minimum of 35 footcandles, making the design reasonably consistent with the USTA criteria.

Spill Light – The spill light values were analyzed at a distance of approximately 150 feet from the courts. The values vary from 0.02 to 0.17 footcandle, as indicated in the Illumination Summary spill in Appendix A. The 0.17 footcandle level is a very low-level illumination and indicates that spill light has been properly mitigated.

The installation of the tennis court lights will not produce spill light for hillside residents living to the east/northeast of the school due to the great distance from the field, together with the higher elevation of these houses. There is no spill light for residents living to the north/northwest, and to the east/southeast, due to the shielding afforded by the school buildings and the trees and the distance from the tennis court site.

Nighttime Glare – The nighttime glow of the lights would present a visual intrusion for residents with views of the site because of the open space area to the west of Pleasant Hill Road. Due to the lack of residential lighting within the open space area, the tennis court lights could standout against the dark backdrop. However, most of the school's outdoor sports facilities are lighted most evenings, and the exterior building lights and parking lot lights are on during the evening hours, making the site visible to residents

> **Mitigation Measure I-1:** Fixtures shall be equipped with special internal optical reflectors and external visors to effectively control trespass light. The proposed tennis court lights shall be provided with a system of manual and automatic controls to allow for the following:
>
> a. The courts will be divided into upper (north) and lower (south) courts, and each group shall operate independently of the other.
>
> b. To turn tennis court lights ON, user shall operate a pushbutton switch mounted on a pedestal outside the court, which will start the lights, as well as start a timer with a one-hour limit. Five minutes prior to the end of the timed period, a warning light will, allowing the user to reset the lights for another hour of play. Lights will automatically turn OFF if the timer is not reset.

[1] Footcandle is a unit of lighting intensity roughly equivalent to the illumination produced by one candle falling on a perfectly reflecting surface of one square foot in area at a distance of one foot.

c. In addition, the light controls shall have a master time switch that will turn OFF all lights at a pre-set time, typically at 11:00 PM.

Mitigation Measure I-2: The school shall re-aim and adjust the luminaires as needed during the initial nighttime testing of the field lights. This will ensure that no spill light remains uncorrected.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
II. **AGRICULTURE RESOURCES:** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				√
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				√
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				√

Discussion:

a-c) No agricultural land is affected by this project. The project site is a part of an existing sports facility contained within the high school grounds.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
III. **AIR QUALITY** — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				√
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				√
d) Expose sensitive receptors to substantial pollutant concentrations?				√
e) Create objectionable odors affecting a substantial number of people?				√

Discussion:

a-e) The proposed tennis court lighting project would not cause a substantial increase in auto emission or cause a deterioration in air quality. The project does not conflict with an applicable air quality plan, nor does it create objectionable odors or expose sensitive receptors to substantial pollutant concentrations.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. **BIOLOGICAL RESOURCES** — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				√
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				√
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				√
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				√
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				√

Discussion:

a-f) The proposed lights will be located on existing tennis courts and therefore would not cause a deterioration in wildlife habitat or interfere with migratory species. The lights would be directed onto the tennis courts and would not affect habitat in the open space area to the west. It will not conflict with any local policies or ordinances protecting biological resources or conflict with a Habitat Conservation Plan, or any natural community conservation plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
V. **CULTURAL RESOURCES** — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				√
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				√
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				√
d) Disturb any human remains, including those interred outside of formal cemeteries?				√

Discussion:

a-d) Since the project will be located on existing tennis courts, the proposed project will not impact cultural resources.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VI. **GEOLOGY AND SOILS** — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				√
ii) Strong seismic ground shaking?		√		
iii) Seismic-related ground failure, including liquefaction?			√	
iv) Landslides?				√
b) Result in substantial soil erosion or the loss of topsoil?				√
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			√	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			√	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				√

Discussion:

a) Fault Rupture: The Hayward fault is the closest known fault, located approximately 12 miles to the southwest of the project site. A geotechnical investigation prepared by Kleinfelder, Inc.,[1] in December 2003 for the football and baseball fields which also includes the tennis courts, determined that "the site has a very low potential for fault rupture, liquefaction and lateral spreading, or differential compaction."

Ground Shaking: The project site will be subject to strong to very strong ground shaking during major earthquakes generated on nearby faults. Construction of the tennis court lights and poles must meet the Uniform Building Code seismic requirements.

Mitigation Measure VI-1: The proposed structures shall meet the Uniform Building Code seismic requirements.

b) Erosion control measures will be incorporated into the contract documents and the project will not create unstable soil conditions or changes in the topography.

c) The project site is not located on a unique geologic unit or unstable soil (Kleinfelder, Inc., December 30, 2003).

d) Expansive soils are limited on the project site. This project will meet or exceed the California Code of Regulations, Title 24, and be reviewed by the Office of Regulation Services.

e) The proposed project does not require a holding tank – the high school is on a municipal sanitary system.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VII. **HAZARDS AND HAZARDOUS MATERIALS** — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				√
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				√
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				√
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				√
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				√
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				√
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				√

Discussion:

a-h) The proposed lights will be located on existing tennis courts and would not result in the risk of an accidental explosion or release of hazardous substances. The location of the court lighting system does not interfere with an emergency response plan or evacuation plan, nor create a health hazard or expose people to a potential health hazard. Although open space exists to the west of the project site, the tennis courts are separated from the open space by a 4-lane roadway and a parking strip. Therefore, the project site is not subject to fire hazard.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VIII. **HYDROLOGY AND WATER QUALITY** — Would the project:				
a) Violate any water quality standards or waste discharge requirements?				√
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				√
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				√
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				√
f) Otherwise substantially degrade water quality?				√
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				√
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				√
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				√
j) Inundation by seiche, tsunami, or mudflow?				√

Discussion:

a) The installation of tennis court lights would have no impact on water quality standards. The tennis court surface will remain unchanged.

b) Groundwater supplies would not be affected because the school site is supplied by a municipal water supplier.

c-f) The tennis courts will not be altered, thus existing drainage patterns and water quality will not be affected.

g-h) The tennis courts are not located within a flood zone, nor are the tennis courts subject to flooding.

i) The tennis court site is relatively flat and located far inland from the ocean, thus it would not be subject to a seiche, tsunami, or mudflow.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
IX. **LAND USE AND PLANNING** — Would the project:				
a) Physically divide an established community?				√
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				√
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				√

Discussion:

a) The installation of the lights will occur on the existing high school tennis courts that are located within the high school property. The lights would not divide an established community.

b) The lighting project is consistent with the City of Lafayette General Plan designation of the school site as well as consistent with the School District's intent for the site.

c) The tennis courts are not located in an area where a habitat conservation plan or natural community conservation plan would apply, but are located within the high school property.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
X. **MINERAL RESOURCES** — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				√
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				√

Discussion:

a-b) There are no known mineral resources located on the high school property.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XI. **NOISE** — Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				√
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				√
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				√
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				√
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				√
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				√

Discussion:

a,c,d) A noise analysis was prepared by Illingworth & Rodkin, acoustical consultants, and found that the extended tennis court play into the evening hours would not cause a noise impact on nearby residents. The analysis concluded that the noise generated by play on the courts would be no greater than the existing ambient noise levels that are currently heard. The noise study is attached as Appendix B.

b) The extended play at the tennis courts due to the lighting project would not expose persons to excessive groundborne vibration or groundborne noise levels.

e-f) The project site is not located near an airport, a private air strip, or within an airport land use plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. **POPULATION AND HOUSING** — Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				√
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				√
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				√

Discussion:

a-c) The tennis court lighting project would not cause the displacement of persons or housing, or induce a substantial population growth. The proposed project is located on the Acalanes High School property.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIII. **PUBLIC SERVICES** —				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				√
Police protection?				√
Schools?				√
Parks?				√
Other public facilities?				√

Discussion:

a) Implementation of the lighting project will extend the length of time that residents can utilize the existing courts, and would not cause an increase in the provision of public services.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV. **RECREATION** —				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				√
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			√	

Discussion:

a) Installation of the tennis court lights would provide a benefit to the community's recreational program by allowing tennis play during the evening hours. This would help to reduce the demand for the courts during the daytime hours.

b) Extending play after dark does require the construction and installation of the lights. The tennis courts are located within the high school facility and will not require the expansion of existing facilities. The lighting system is designed to minimize light trespass and glare, therefore adverse physical effects on the environment will be minimal.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. **TRANSPORTATION/TRAFFIC** — Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				√
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				√
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				√
e) Result in inadequate emergency access?				√
f) Result in inadequate parking capacity?				√
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				√

Discussion:

a-b) Pleasant Hill Road serves the tennis court site and is a four-lane arterial street that extends from Lafayette north through Pleasant Hill. Based on a recent intersection count at Pleasant Hill Road/Deer Hill Road (south of the tennis courts), Pleasant Hill Road carries about 3,000 PM peak hour vehicles passing the high school site. The Deer Hill Road/Pleasant Hill Road intersection currently operates at a Level of Service C-D range.[2]

The proposed tennis court lighting project would allow for evening use of the existing tennis courts. During the months of "daylight savings" time during the year, there is sufficient sunlight to allow tennis court use during the PM commute hour period. During those months, the project would have no effect on PM peak commute hour traffic flows. However, during about six months of the year, the lighting would allow tennis court use during the PM commute period.

The PM peak hour trip generation for the tennis courts has been calculated on the bases of trip data compiled by the Institute of Transportation Engineers (ITE) and the San Diego Association of Governments (SANDAG).[3,4] The tennis courts' trips are calculated as follows:

- 6 tennis courts @ 3.88/court = 23 PM peak commute hour trips (12 in/11 out)

The 23 peak hour trips would be well below the Contra Costa Transportation Authority (CCTA) 100-trip threshold at which a detailed traffic study would be required.[5]

The PM peak hour tennis court trips would be expected to have a relatively equal distribution north and south on Pleasant Hill Road. The project would add about 0.4% to the existing PM peak hour volumes on Pleasant Hill Road and about 0.3% to the overall PM peak hour volumes at the Pleasant Hill Road/Deer Hill Road–Stanley Boulevard intersection.

Changes of these magnitudes would not be measurable within the typical daily fluctuations in traffic flows. There would be no change in the traffic operations of the adjacent street network. As mentioned previously, these added PM peak hour trips would only be generated when the tennis courts are in use during the evening hours when lights are required.

The project would result in added turning movements in/out of the two driveways accessing the tennis courts. The distribution of the 23 PM peak hour trips in/out of two driveways would tend to

reduce impacts. The greatest delays would be experienced by outbound left turns, but again, these added PM peak hour trips would only be generated during a portion of the year. The addition of an estimated 4 outbound left turns would not add measurably to vehicle conflicts and delays.

c) The project site is not located near an airport, thus air traffic patterns would not be affected.

d) The site's circulation would not change. There is adequate space for vehicles to maneuver safely.

e) The parking area located between the tennis courts and Pleasant Hill Road has two in/out driveways, thus emergency access would not be affected.

f) The high school site contains adequate parking to accommodate persons using the tennis courts.

g) The lighting project does not conflict with adopted plans or policies pertaining to alternative methods of transportation.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI. **UTILITIES AND SERVICE SYSTEMS** — Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				√
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				√
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				√
g) Comply with federal, state, and local statutes and regulations related to solid waste?				√

Discussion:

a-g) The proposed lighting system will not affect existing wastewater treatment systems or capacity since no new bathroom facilities will be constructed as a part of this project. The project will not require the construction of new storm water drainage facilities or expansion of existing facilities; does not cause an increase in the water demand; nor cause an impact to landfill capacity. The lighting project is a part of the school district's improvement programs for athletic facilities. As such, the District complies with federal, state and local statutes and regulations related to solid waste.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII. **MANDATORY FINDINGS OF SIGNIFICANCE —**				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				√
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)				√
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				√

Discussion:

a-c) The proposed tennis court lighting project does not affect biological resources since the site is contained within the developed high school campus. The project does not create cumulative impacts, nor does the project cause substantial adverse effects on human beings.

---

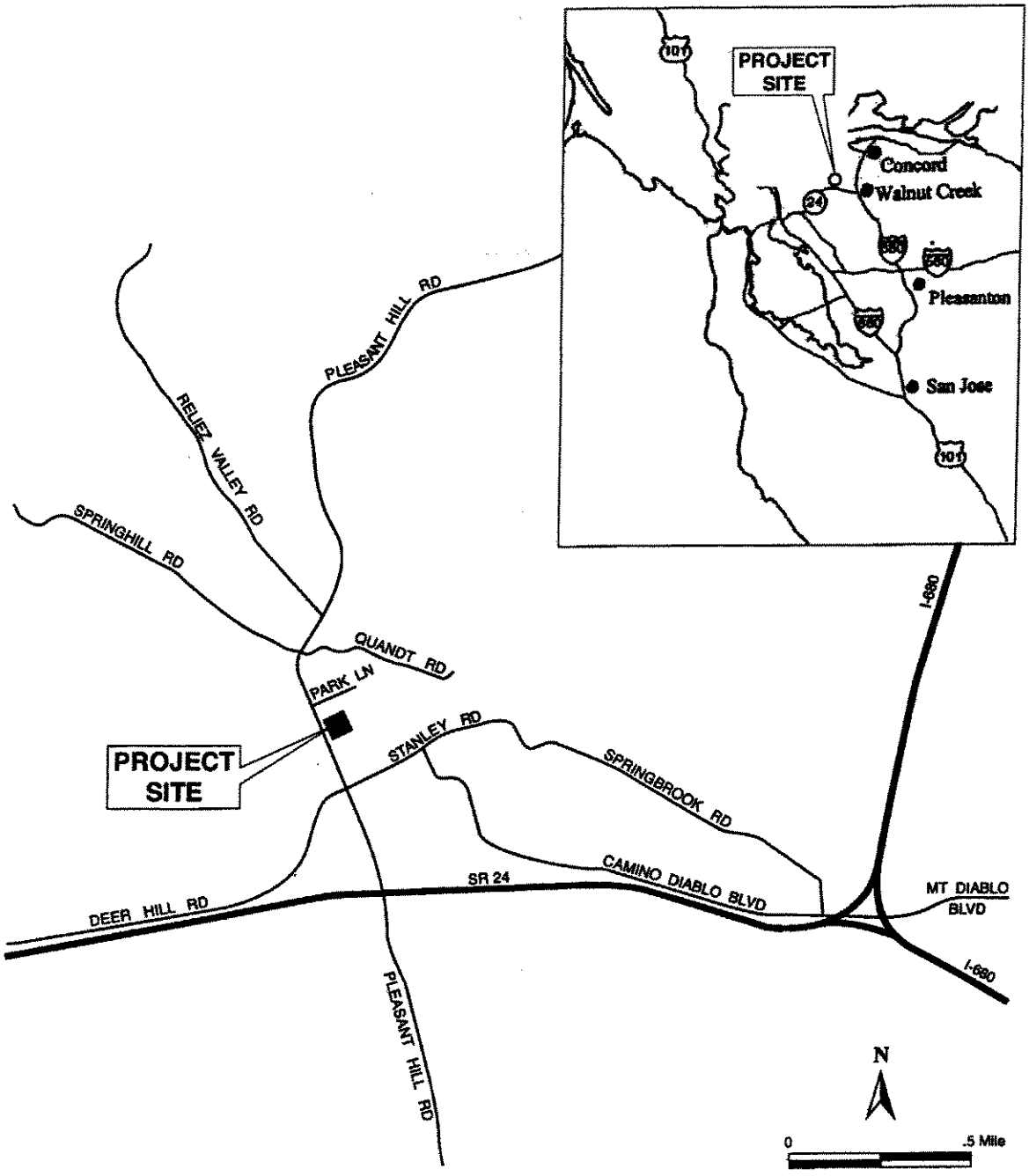
[1] Kleinfelder, Inc., Results of Geotechnical Investigation for Football and Baseball Fields and Other Improvements at Acalanes High School, December 30, 2003.

[2] Omni-Means Engineers and Planners, Transportation Study for the Proposed Lafayette Park Terrace Residential Project, October 2005.

[3] ITE, Trip Generation - 7th Edition, 2003.

[4] SANDAG, Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.

[5] CCTA, Technical Procedures, September 17, 1997.



Source: Mills Associates

Figure 1 Site Location Map and Regional Setting

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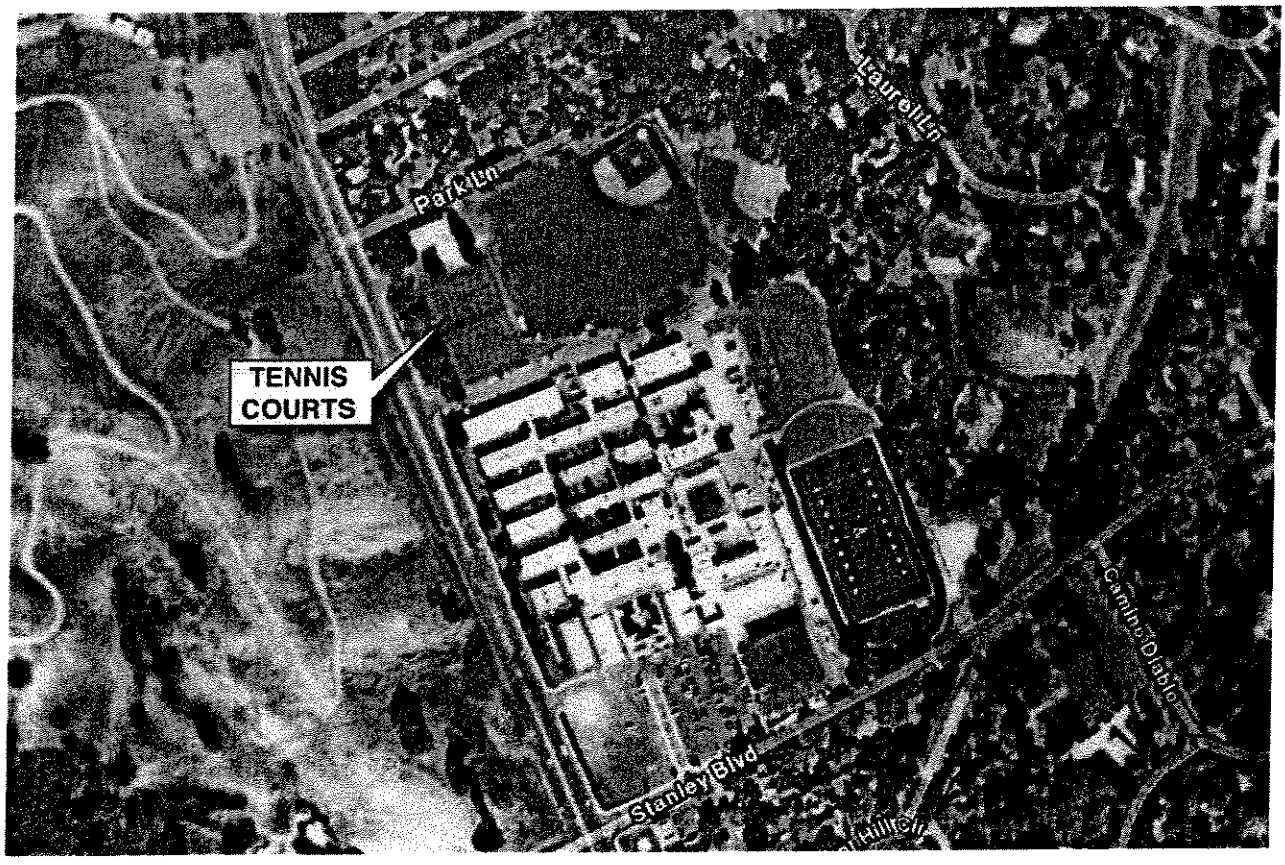
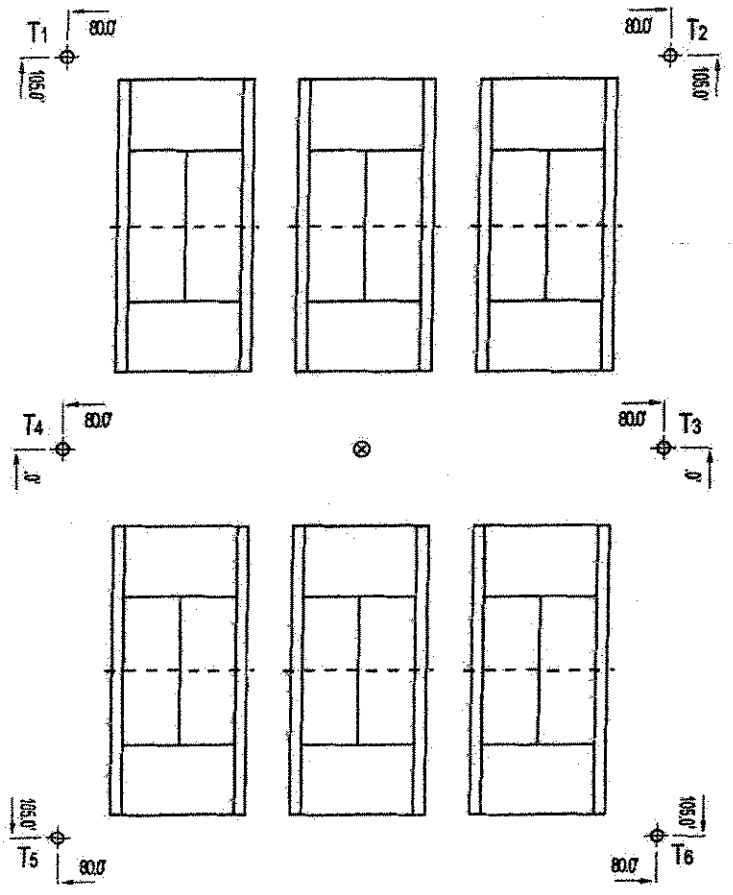


Source: Mills Associates

Figure 2 Aerial Photo of Acalanes High School



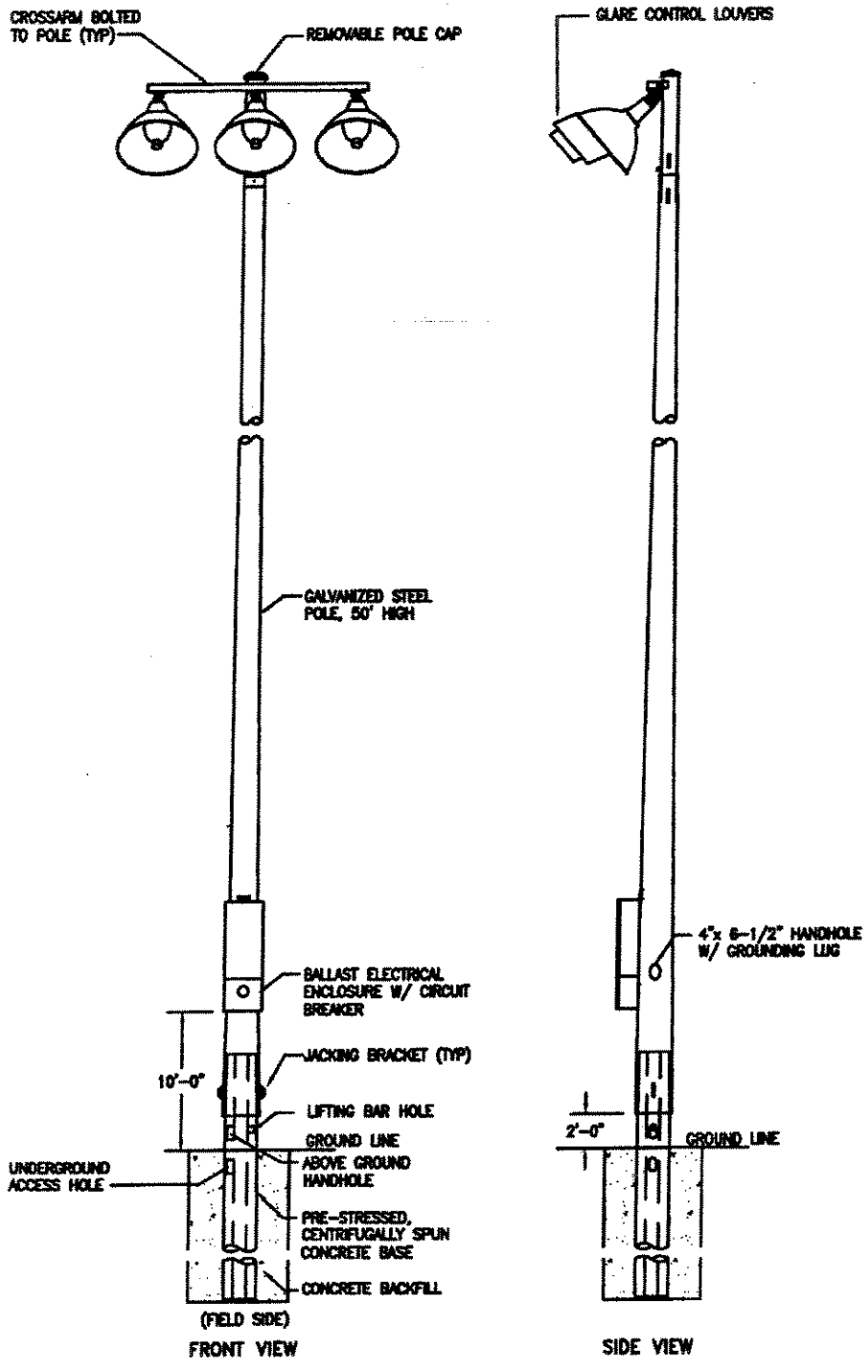
$T1_O$ Location of light pole

0 80 Feet

Source: MUSCO

Figure 3 Site Plan

177



Source: MUSCO

Figure 4 Illustration of 3-Light Pole

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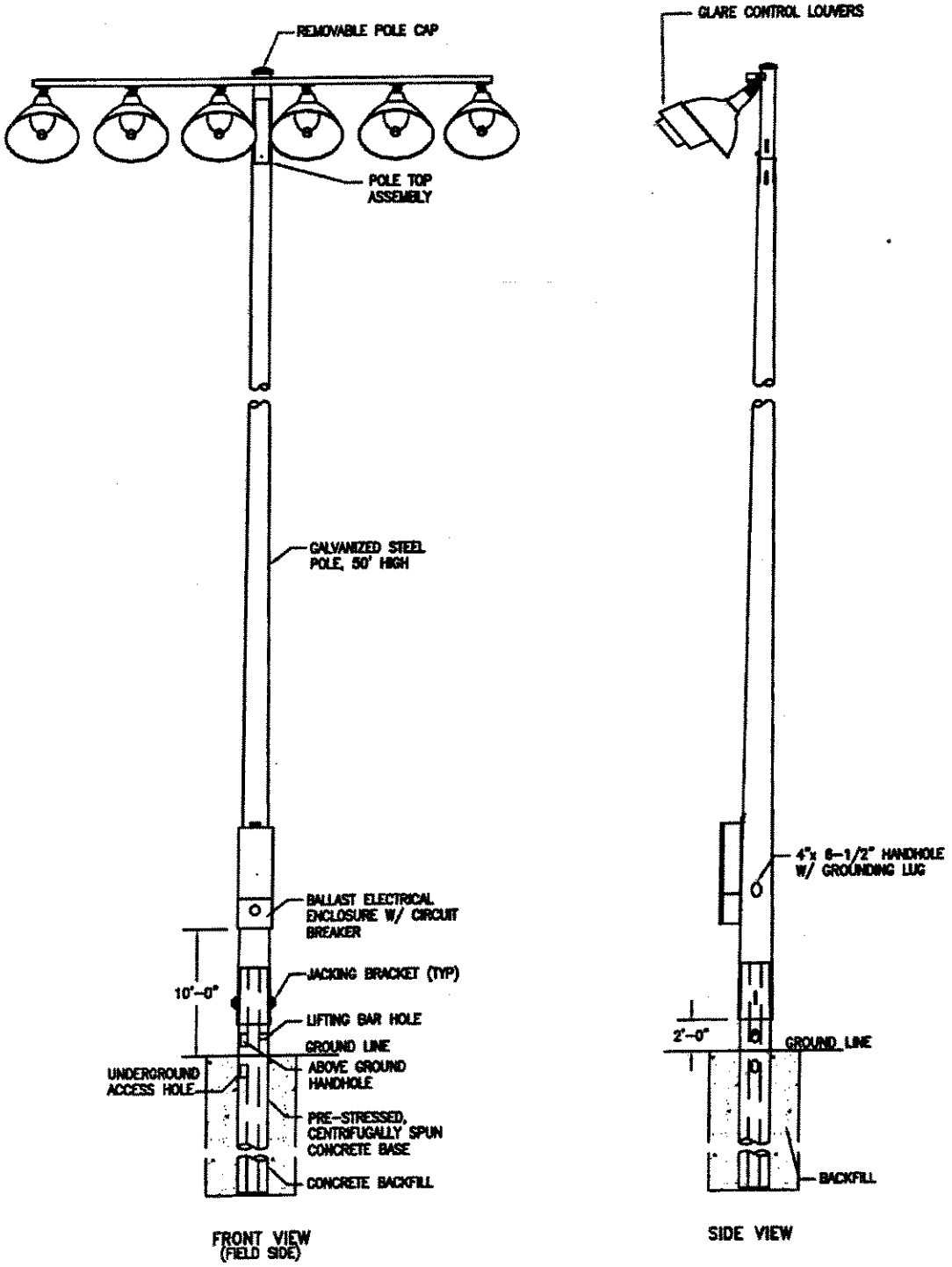

Source: MUSCO

Figure 5 Illustration of 6-Light Pole

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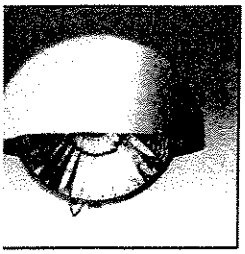
Appendix A

MUSCO Lighting Materials

Light-Structure Green™ System — still Five Easy Pieces™ plus:

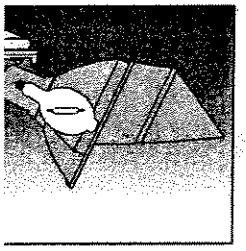


Improved Luminaire Efficiency

1. **Reflector system:** More than 2000 photometric patterns provide optimal energy efficiency and minimal spill light for each project.
2. **Visor System:** Several visor choices provide energy efficient light on the field and minimal spill light. The aerodynamics reduce wind load on the poles.
3. **Side Shift Beam Control:** Beams can be adjusted within the luminaire horizontally as well as vertically. We can now custom fit the light to the corners.

Smart Lamp™ Operating System

1. **Lamp:** 30 years of lamp experience has taught Musco to operate the lamp with less energy and extend its life with a system of timed power adjustments.
2. **Geared tilt adjustment:** With a geared leveling mechanism the lamp arc tube operates in the energy advantageous horizontal position.

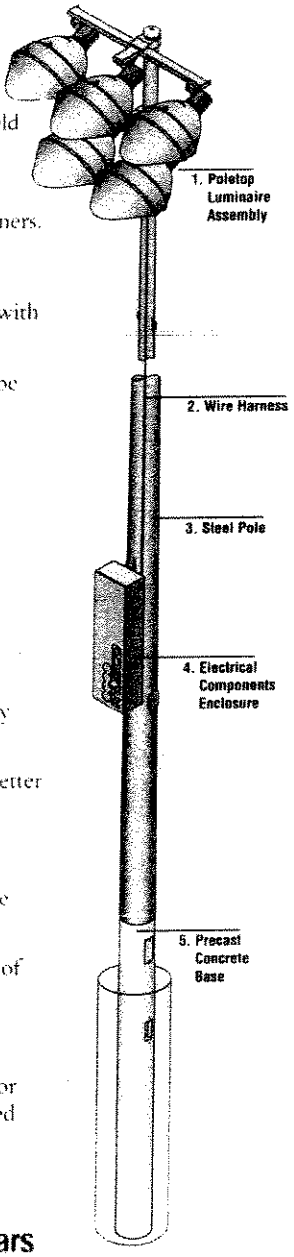


Increased Durability, Assured Results

1. **Die-Cast aluminum reflector housing:** Provides a rugged foundation for building and maintaining a sophisticated photometric unit.
2. **Gasketing:** Improved material and gasket system design virtually eliminate "outgasing" and other contamination of the reflectors and lens.
3. **Factory Assembled Luminaires:** The luminaire ships totally assembled: avoids contaminants, saves time, improves aiming accuracy.
4. **Attaching Mechanism:** The factory assembled luminaire connects electrically and structurally to the crossarm with one simple attachment.
5. **Factory Aiming:** Musco's well established service of factory aiming is even better with Light-Structure Green . . . field changes can still be done.

Solid control and flexible management

1. **Controls and monitoring:** This system, in one simple cabinet, included in the base price, saves energy and gives you a solid, flexible management tool.
2. **Control Link Central™:** Real people at Musco, 24/7, support your operation of your lights. . . .from office, field or home . . . benefits field users and neighbors.



Ultimate guarantee . . . at no extra cost

With **Green Generation Lighting,** Musco's 10 Club Service guarantees it all for 10 years, plus free relamping at the end of the lamps rated life. All of this is assured by Musco's field service department and their technicians.

Light Structure Green™ is the result of more than a dozen inventions and innovations from more than 10 million dollars of research and capital investment by Musco.

musco Lighting

We Make It Happen

800/825-6030

www.musco.com

e-mail: lighting@musco.com

Musco product is engineered to operate one or more of the following U.S. Patents: 4450507, 4725934, 4729077, 4819974, 4947303, 4954758, 5078826, 5134557, 5161883, 5211473, 5229681, 5377811, 5398478, 5420567, 5438497, 5463530, 5491329, 5630048, 5816691, 5896721, 6000356, 6019493, 6250588, 6341865, 6398392, 6679077, 6681110, D337158, D358761, D359561, 1141929 (Canada Patents), 70473, 73755, 74289, 80955 (Australia Patents), 1256361, 1273096, 2058281, 2106814, 2206511, 2206512, 2206513, 2206514, EPO Patents, 0482071, Mexico Patents, 175963, 183201, Other patents pending.

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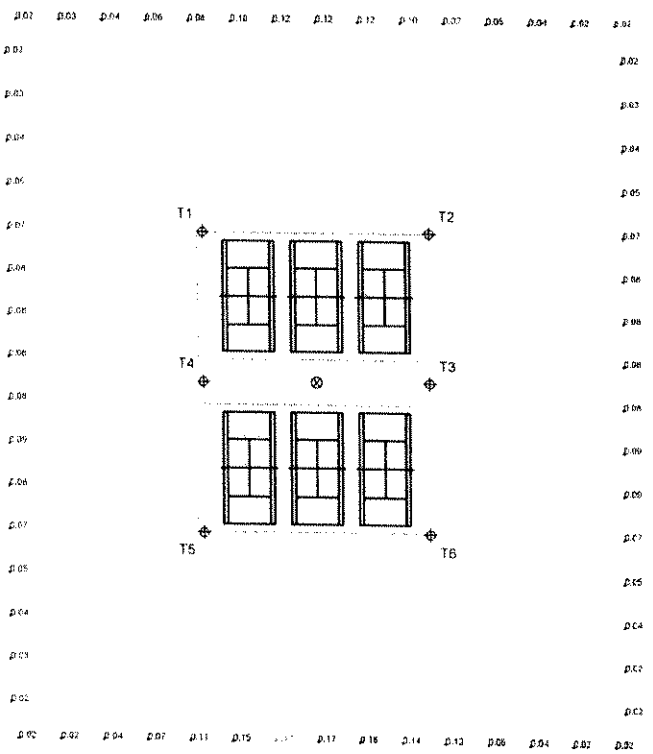
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1-T2 T5-T6	50'	-	50'	1500W M2	3	3	0
2	T3-T4	50'	-	50'	1500W M2	6	6	0
6	TOTALS					24	24	0



SCALE IN FEET 1 : 80

0 80 160

Pole location(s) + dimensions are relative to 0,0 reference point(s).

MUSCO
GREEN GENERATION LIGHTING™
GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

Spill
Acalanes HS Tennis
Lafayette, CA

Spill
Grid Spacing = 30.0
Values given at 3.0 above grade

Luminaire Type Green Generation
Rated Lamp Life 5000 hours
Avg Lumens/Lamp 134,000

CONSTANT ILLUMINATION
HORIZONTAL FOOTCANDLES

	Statistical Area
No. of Target Points	62
Average:	0.0654
Maximum:	0.17
Minimum:	0.02

Average Lamp Tilt Factor	1.000
Number of Luminaires	24
Avg KWh Consumption over 5000 hours	37.44

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01. Individual measurements may vary from computer predictions.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet of design locations.

By: Nick Tippet Date: 24-Oct-05
File # 111328

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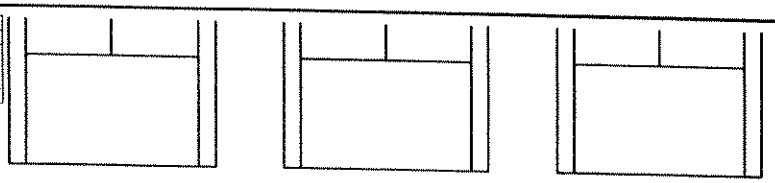
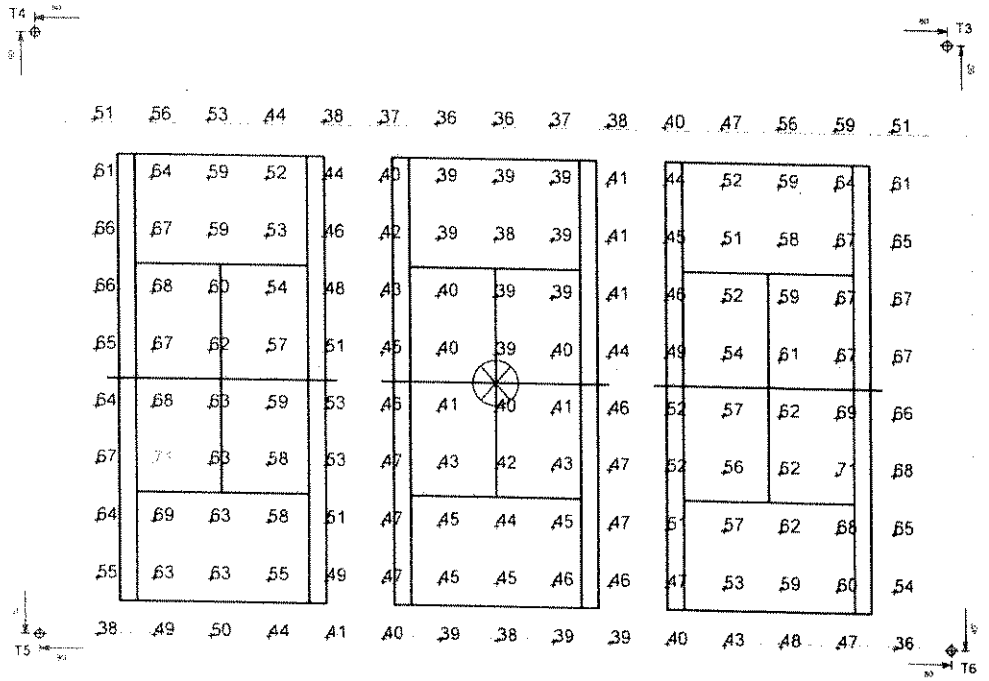
EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	SIZE	GRADE ELEVATION	Pole MOUNTING HEIGHT	Luminaires LAMP TYPE	QTY / POLE	INSIDE GRID	OTHER GRIDS
2	T3-T4	50'	-	50'	1500W MZ	6	3	3
2	T5-T6	50'	-	50'	1500W MZ	6	3	0
4	TOTALS					18	12	6





SCALE IN FEET 1 : 20

0 20 40

Pole location(s) + dimensions are relative to 0,0 reference point(s).

MUSCO
GREEN GENERATION LIGHTING™

GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

TENNIS 2
Acalanes HS Tennis
Lafayette, CA

TENNIS 2
Size: Field Object
Grid Spacing = 10.0' x 10.0'
Values given at 3.0' above grade

Luminaire Type: Green Generation
Rated Lamp Life: 5000 hours
Avg Lumens/Lamp: 134,000

CONSTANT ILLUMINATION
HORIZONTAL FOOTCANDLES

Statistical	Area
No. of Target Points	150
Average:	51.50
Maximum:	71
Minimum:	36
Avg/Min:	1.43
Max/Min:	1.98
UG (Adjacent Pts)	1.49
CV:	.3
Average Lamp Tilt Factor	1.000
Number of Luminaires	12
Avg KWh Consumption over 5000 hours	18.72

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01. Individual measurements may vary from computer predictions.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet of design locations.

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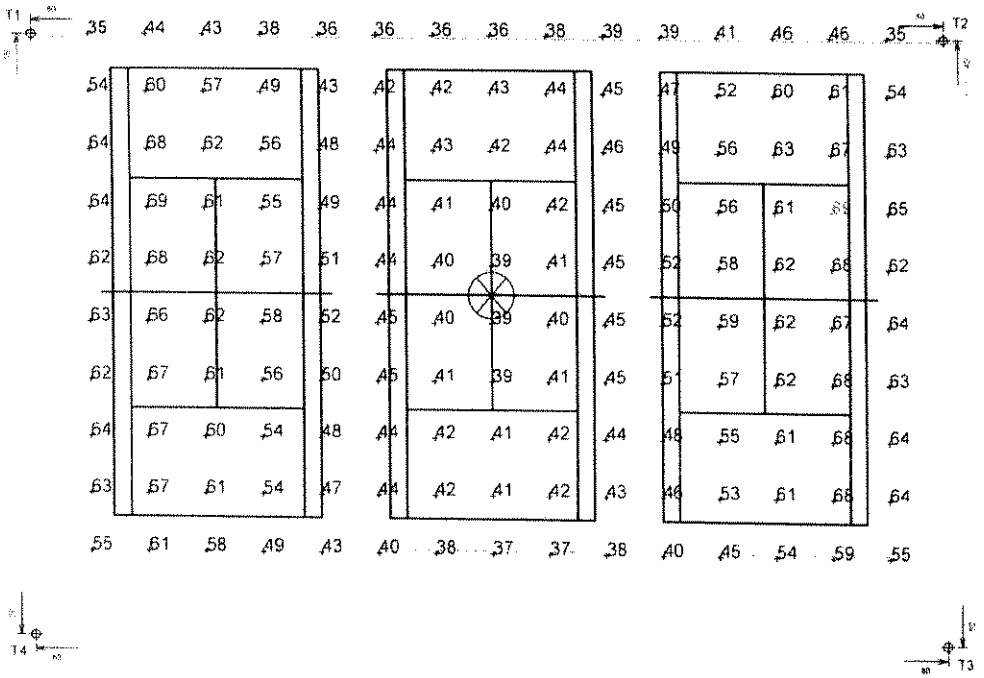
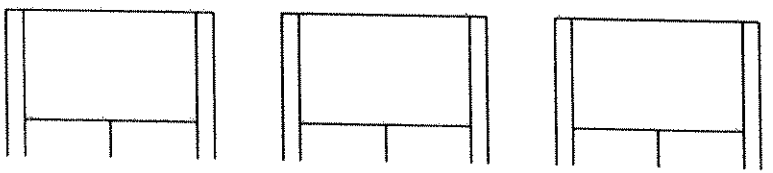
#281

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	SPAN ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	TOP GRID	OTHER GRIDS
2	T1-T2	60	-	50'	1500W M2	3	3	0
2	T3-T4	60	-	50'	1500W M2	6	3	3
4	TOTALS					18	12	6





SCALE IN FEET 1 20

0 20 40

Pole location(s) + dimensions are relative to 0,0 reference point(s) (+).

musco
GREEN GENERATION LIGHTING™

GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

TENNIS 1
Acalanes HS Tennis
Lafayette, CA

TENNIS 1
- Size: Field Object
- Grid Spacing = 10.0' x 10.0'
- Values given at 3.0' above grade

Luminaire Type: Green Generation
Rated Lamp Life: 5000 hours
Avg Lumens/Lamp: 134,000

CONSTANT ILLUMINATION
HORIZONTAL FOOTCANDLES

	Statistical Area
No. of Target Points	150
Average:	51.39
Maximum	69
Minimum	35
Avg/Min	1.48
Max/Min	1.97
DG (Adjacent Pts)	1.54
CV	0
Average Lamp Tilt Factor	0.00
Number of Luminaires	12
Avg kWh Consumption over 5000 hours	16.72

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01. Individual measurements may vary from computer predictions.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet of design locations.

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Appendix B

Noise Study

ACALANES HIGH SCHOOL
TENNIS COURT LIGHTING PROJECT
ENVIRONMENTAL NOISE ASSESSMENT
LAFAYETTE, CALIFORNIA

May 2, 2006

Prepared for:

Carolyn Mills
Mills Associates
3744 Mt. Diablo Boulevard, Suite 303
Lafayette, CA 94549

Prepared by:

Richard B. Rodkin, PE

ILLINGWORTH & RODKIN, INC.
Acoustics · Air Quality
505 Petaluma Boulevard South
Petaluma, CA 94952
(707) 766-7700

Job No.: 06-063

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INTRODUCTION

This noise study assesses potential noise impacts resulting from the lighting of the existing tennis courts at Acalanes High School in Lafayette. The study describes the existing noise environment at the nearest potentially affected residences to the courts and potential noise impacts resulting from the extension of tennis play into the evening hours that would be accommodated by the lighting. Included is a discussion of the fundamentals of acoustics, a description of state and local guidelines and policies, a description of the existing noise environment and a discussion of potential noise impacts resulting from the project and measures to mitigate the impacts.

SETTING

Fundamental Concepts of Environmental Acoustics

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. *A decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

TABLE 1 Definitions of Acoustical Terms Used in this Report

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, CNEL*, is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level,* L_{dn}, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Regulatory Background

The State of California and the City of Concord establish plans and policies which are designed to limit noise exposure at noise sensitive land uses. These plans and policies include: (1) the State CEQA Guidelines, Appendix G; and (2) the City of Concord Health and Safety Element of the General Plan.

State CEQA Guidelines

The California Environmental Quality Act (CEQA) has established guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. A noise impact occurs if a project causes:

(1) Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies.

(2) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

(3) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

(4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

(5) For a project located within an airport land use plan or, where such a plan has not been adopted within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

(6) For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

The only applicable criterion is number 4.

City of Lafayette Noise Element

The City of Lafayette's Noise Element of the General Plan sets forth the following policies and programs to assess and control environmental noise, which are applicable to this project.

- Policy N-1.2 Reduce Noise Impacts: Avoid or reduce noise impacts first through site planning and project design. Barriers and structural changes may be used as mitigation techniques only when planning and design prove insufficient.

    - Program N-1.2.2: Evaluate mitigation measures for projects that would cause a "substantial increase" in noise as defined by the following criteria or would generate unusual noise which could cause significant adverse community response.

        (a) Cause the L_{dn} in existing residential areas to increase by 3 dB or more;
        (b) Cause the L_{dn} in existing residential areas to increase by 2 dB or more if the L_{dn} would exceed 70 dB; or
        (c) Cause the Ldn resulting exclusively from project-generated traffic to exceed an L_{dn} of 60 dBA at any existing residence.

- Policy N-1.2.2 Mitigate Noise Impacts: Mitigate noise impacts to the maximum feasible extent.

    - Program N-2.2.2: Require acoustical studies of any project that would potentially generate non-transportation noise level in a residential area such that noise levels would exceed the planning standards set forth in Program N-1.2.2.

City of Lafayette Noise Ordinance

The City of Lafeyette's Noise Ordinance is set forth in Sections 5-201 through 5-209 of the *Municipal Code.* Public schools are not normally subject to local ordinances. The limits set forth in the ordinance, however, provide a measure of acceptability for community noise in Lafayette. At single-family residences, the outdoor noise limit is 50 dBA L_{50} during the daytime (7:00 AM to 10:00 PM) and 45 dBA L_{50} during the nighttime (10:00 PM to 7:00 AM). Higher noise levels are allowed for shorter time periods during each hour. If ambient noise levels exceed the allowable limit, then the allowable noise exposure standards are increased in 5 dB increments in each category, as appropriate, to encompass the ambient noise level. The allowable limits are lowered by 5 dB if the alleged offensive noise contains an audible tone, is impulsive in nature, or contains music or speech conveying informational content.

Existing Noise Environment

Acalanes High School is located in the City of Lafayette on Pleasant Hill Road north of Stanley Boulevard. The tennis courts are along Pleasant Hill Road just south of the office located near the northwest corner of the property at the intersection of Pleasant Hill Road and Park Lane. Single-family residences are located along Park Lane north of the tennis courts. The existing

noise environment was measured continuously from 1:00 PM on Wednesday, April 19, until noon on Monday, April 24, at one location along Park Lane to characterize the existing ambient noise levels at the nearest residences to the tennis courts which have a direct, unobstructed view of the courts. Attended short-term measurements were made at two locations along Park Lane during play on one of the tennis courts. The measurement locations are shown on Figure 1. Sources of sound that affected the noise measurements include steady traffic on Pleasant Hill Road and occasional vehicles on Park Lane. Activities at the school, including sports activities at the baseball field and use of the tennis courts, would also contribute intermittently to the community's noise environment.

Ambient noise levels were monitored in concurrent ten-minute intervals. During each interval, the equivalent average sound level (L_{eq}) and the levels exceeded 1, 10, 50, and 90 percent of the time interval were calculated and reported. Measurements were conducted with Larson Davis Laboratories Type 1 integrating sound level meters fitted with precision microphones and windscreens. Figures 2 through 7 show the distribution of data including the hourly average noise level (L_{eq}), and the noise levels exceeded one, ten, fifty, and ninety percent of the time (L_{01}, L_{10}, L_{50}, and L_{90}).

During the attended measurements along Park Lane, four persons were playing tennis on one of the courts. Noise levels generated during this relatively low use of the courts did not contribute to measured ambient levels at the two locations along Park Lane. The sounds at the courts were mostly not audible above the ambient traffic noise. Data from other tennis courts are presented and are used in the impact analysis. These data are representative of full use of multiple tennis courts by various age groups.

Extensive measurements of noise levels generated by tennis were conducted for a facility in Palo Alto, California.[1] The noise surveys found that there are two dominant noise sources, the ball being hit and the squeak of tennis shoes sliding on the court surface. Voices are occasionally audible but do not significantly contribute to measured noise levels. The noise levels are related to age and skill level of the players involved. The stronger players hit the ball harder and move more quickly on the court, generating higher noise levels from the ball strikes and the shoe squeaks. The range of expected noise levels can be represented by a comparison of professional level players and youth, with average adult players falling in between. Professional players, when serving and returning a serve, generate maximum A-weighted noise levels of approximately 68-73 dBA measured at a distance of 25 feet using the "fast response" setting on a standard sound level meter. For youth, the maximum noise levels range from about 64-70 dBA. When volleying, maximum instantaneous noise levels are typically in the range of 50-60 dBA for both skill levels. Shoe squeaks fall within the range of volleying, at levels of approximately 50-60 dBA measured at a distance of 25 feet. The average noise level measured during one hour of tennis playing was 48 dBA L_{eq} at a distance of 40 feet from the end of the court where play was occurring. Additional data were gathered at other distances from courts and provide additional insight into noise generation. Noise levels generated by tournament players and young

[1] *Proposed Tennis Facility at 3009 Middlefield Road, Palo Alto, California, Third Party Review of the Noise Issues,* prepared for City of Palo Alto, Department of Planning and Community Environment, by Illingworth & Rodkin, Inc., April 1997.

adult players, measured 80 feet from the end of courts during matches, typically range from 48-56 dBA.

Impacts and Mitigation Measures

The lighting project will allow use of the courts until 10:00 PM or 11:00PM. Users of the tennis courts must purchase a user permit from the city in order to enter the courts. The lights will be on a timer and will permanently shut off at the designated time.

The CEQA checklist item relevant to this assessment is: "Would the noise from the project cause a substantial temporary or periodic increase in noise levels at noise sensitive receivers?" A significant noise impact would result if the noise exposure at a residence would increase substantially over existing conditions as a result of the lighting of the courts. The noise exposure levels are compared in several ways. One comparison, per the City Noise Element, is the overall increase in the daily average noise level (L_{dn}). Another measure is the comparison of the average noise level generated during the activity to the existing background noise level at the time the activity is proposed to occur. Maximum instantaneous levels are compared to the noise ordinance limits.

Using data previously described, and accounting for the fact that play could be occurring concurrently on six tennis courts during the evening, hourly average and daily average noise levels can be predicted at the nearest residences which are located approximately 180 feet from the near corner of the tennis courts. Hourly average noise levels resulting exclusively from maximum play on the tennis courts is calculated to range from about 38-40 dBA at the residences located along Park Lane north of the courts and generally east of the office building. Hourly average ambient noise levels are typically 50 dBA L_{eq} or higher during the evening hours when the play under the lights would occur. Because average noise levels predicted from the tennis play are more than 10 decibels below ambient levels, and due to the logarithmic nature of decibels, they would cause no measurable increase in average noise levels during these evening hours. Even if play were extended until 11:00 PM, there would be no increase in the day/night average noise levels at the nearest sensitive receivers as a result of play on the tennis courts.

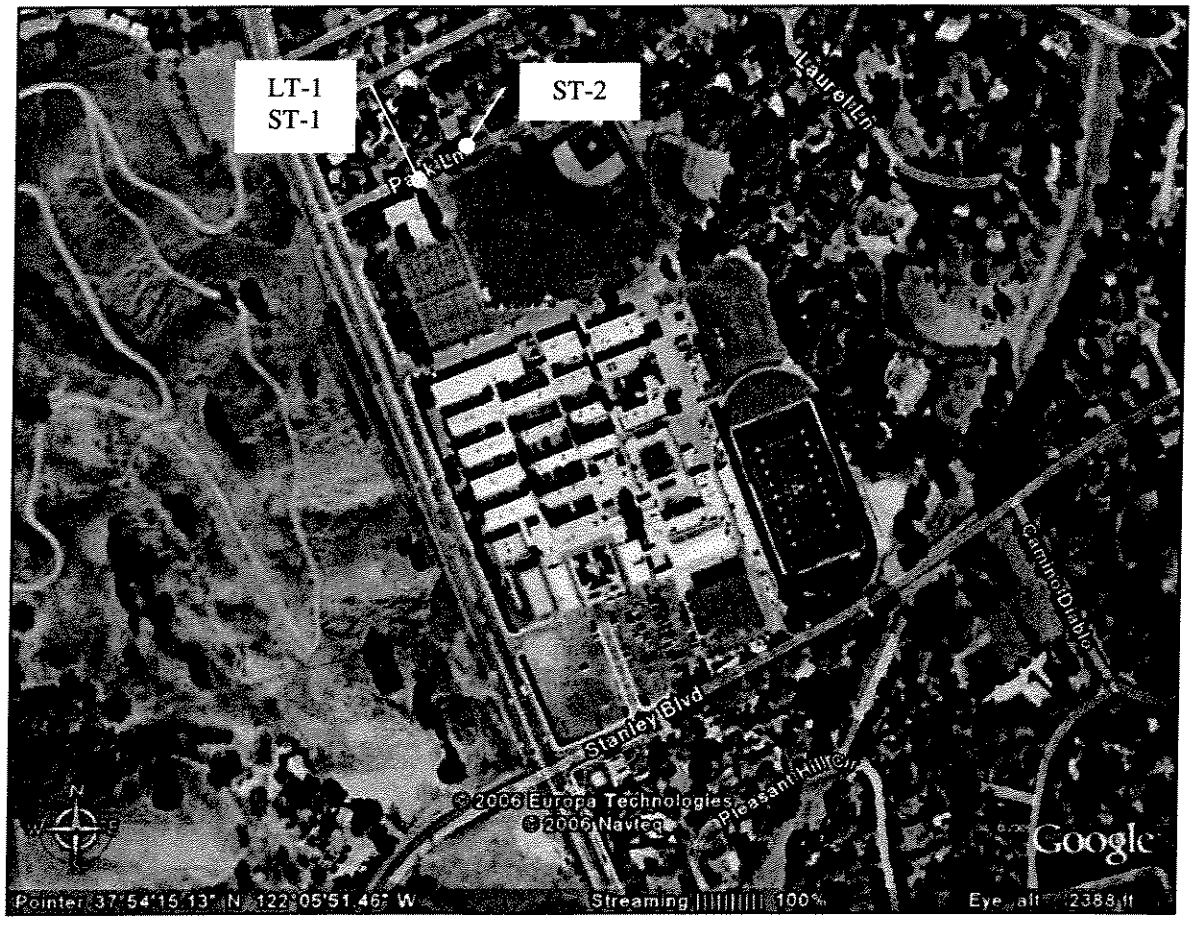
Another comparison would be the average noise levels of tennis play compared to the background noise levels during the evening hours. Because of the nature of the noise caused by tennis, it is typically appropriate to penalize the noise 5 dBA (similar to the noise ordinance) when making this comparison. Background noise levels during the evening hours, as represented by the L_{90} descriptor shown in the ambient noise measurement data, were sometimes as low as 43 dBA but were typically 45-50 dBA. After penalizing the noise from the tennis play 5 dBA, the hourly average noise from the tennis play would be at about 43-45 dBA L_{eq}. Penalized noise from tennis play would, therefore, be approximately equal to ambient background noise levels. When this is the case, there is no impact.

The highest instantaneous maximum noise levels generated by ball strikes and other sources on the court is 73 dBA measured at a distance of 25 feet. When projected out to the nearest residence, the maximum predicted level is about 55 dBA L_{max}. The threshold from the City's noise ordinance which would be applicable to this project would be the allowable L_{max} level at night (after 10:00 PM) penalized 5 dBA for the content of the noise. The allowable level would

be 60 dBA L_{max} without any adjustment for ambient noise. A credible worst case prediction of noise from tennis play would be 5 dBA below this threshold and normal play would be 10-15 dBA below this noise ordinance limit.
Traffic is expected to access the courts directly from Pleasant Hill Road. Given the distance from the parking areas to the nearby neighbors, sound levels generated by persons in the parking areas would not make a measurable or noticeable contribution to ambient noise levels at the nearby homes. Traffic-related noise would cause a less-than-significant impact.

Extending play on Acalanes High School tennis courts to 10 PM or 11:00 PM would cause no noise impact upon nearby residents. No mitigation measures are required.

Figure 1 **Noise Measurement Locations**



196

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 19-20, 2006

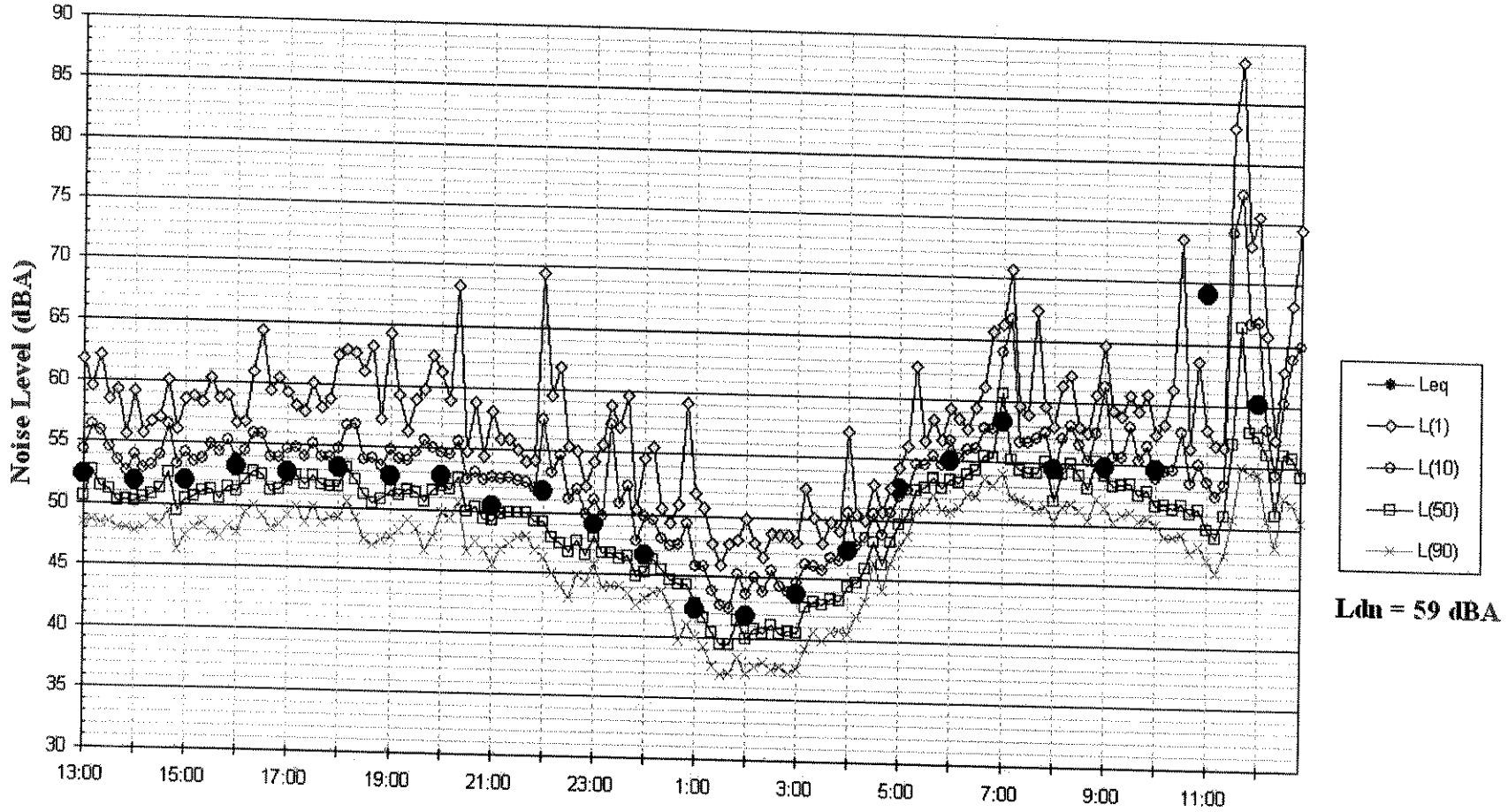


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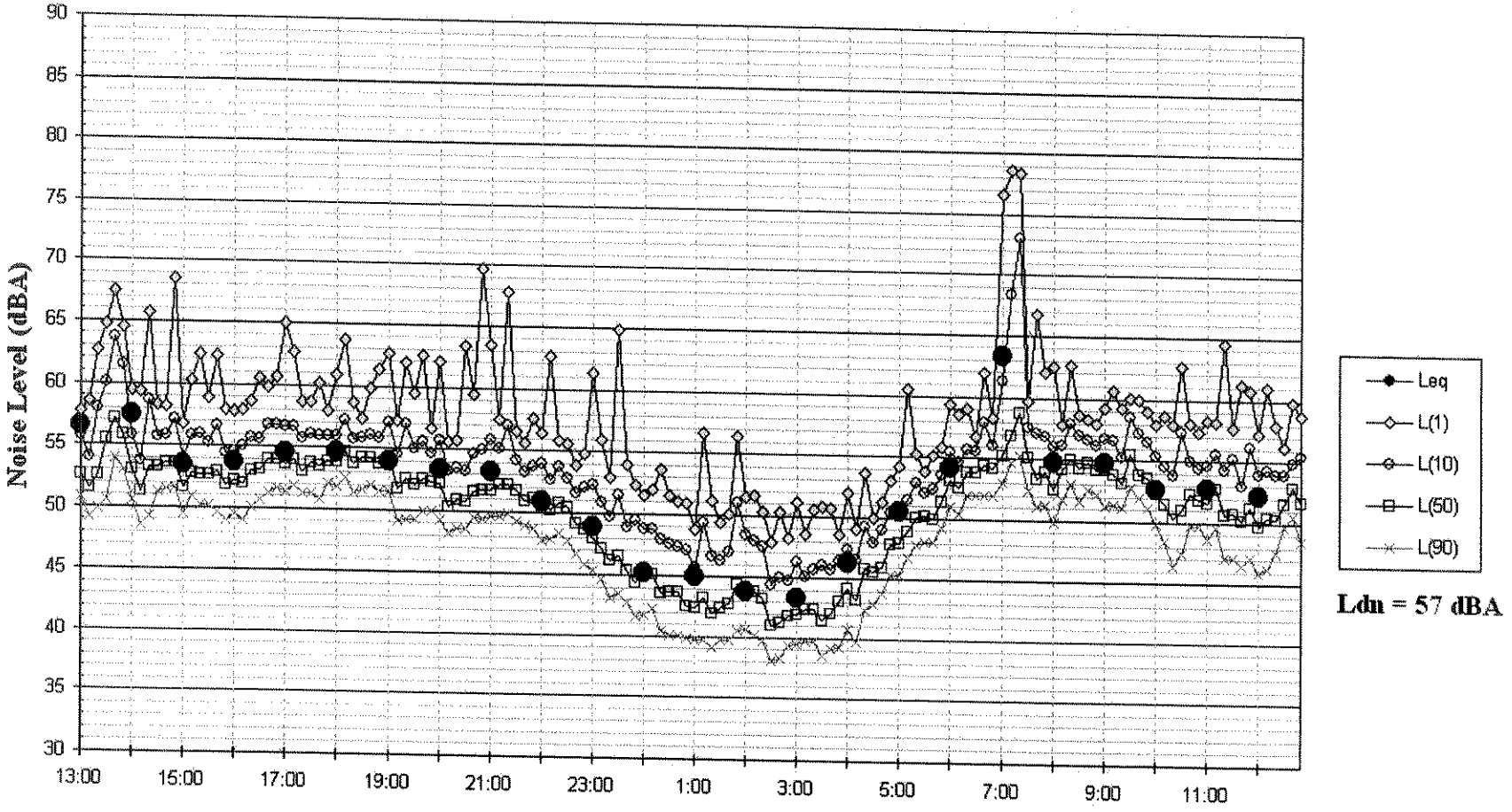
Figure 2

+ 191

891

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 20-21, 2006



Ldn = 57 dBA

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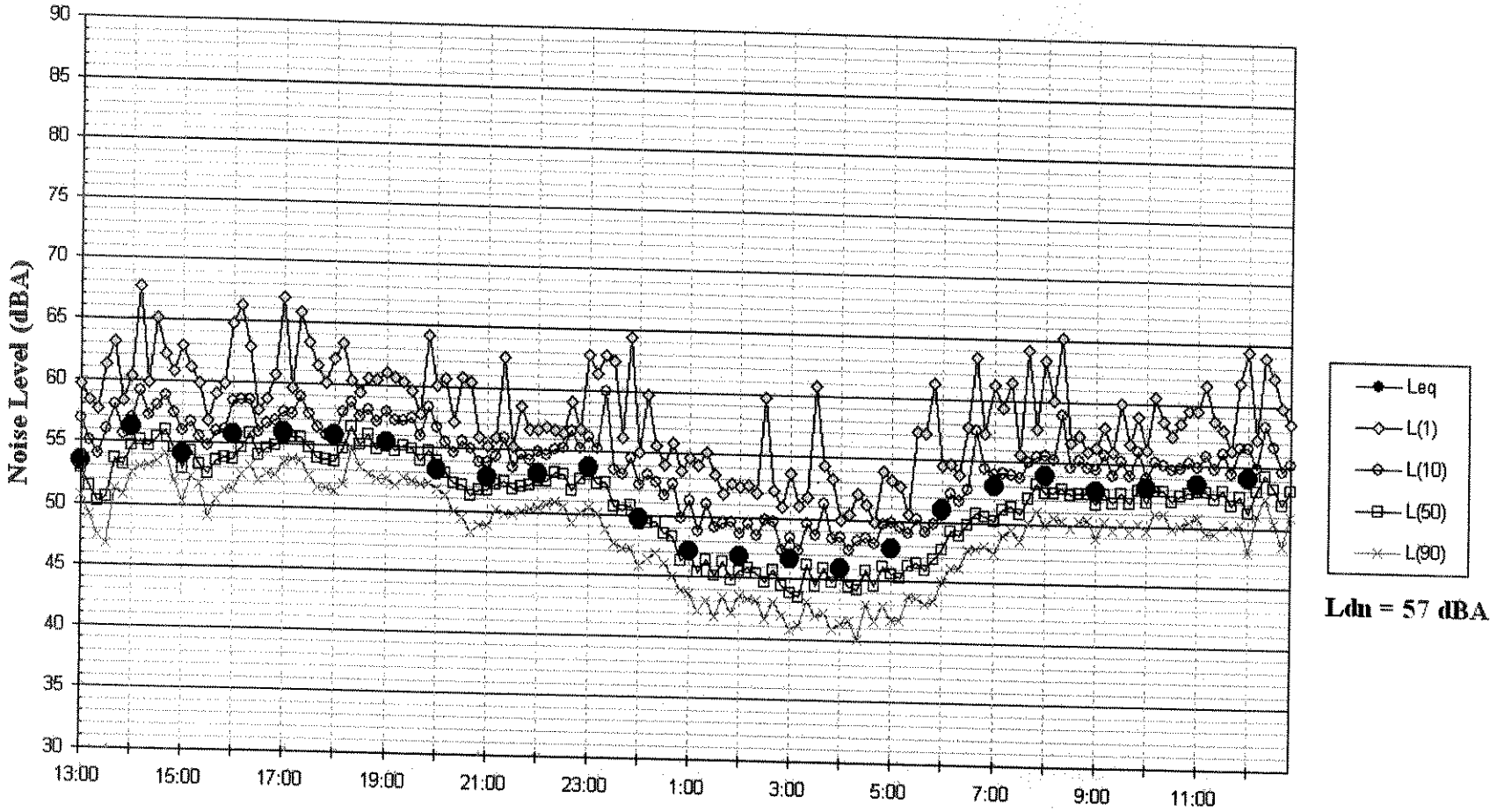
Figure 3

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 21-22, 2006



Ldn = 57 dBA

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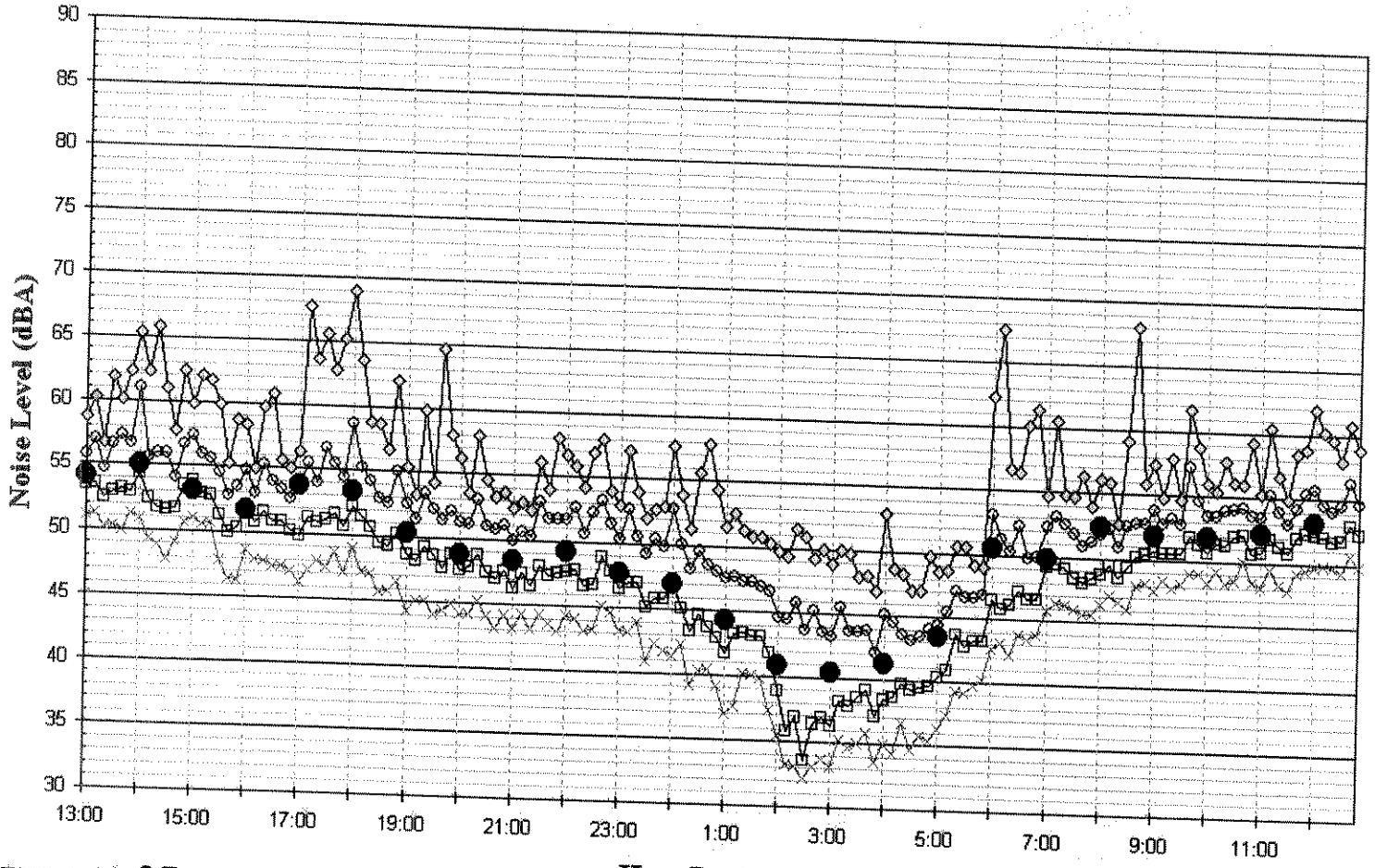
Figure 4

161

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 22-23, 2006



Ldn = 54 dBA

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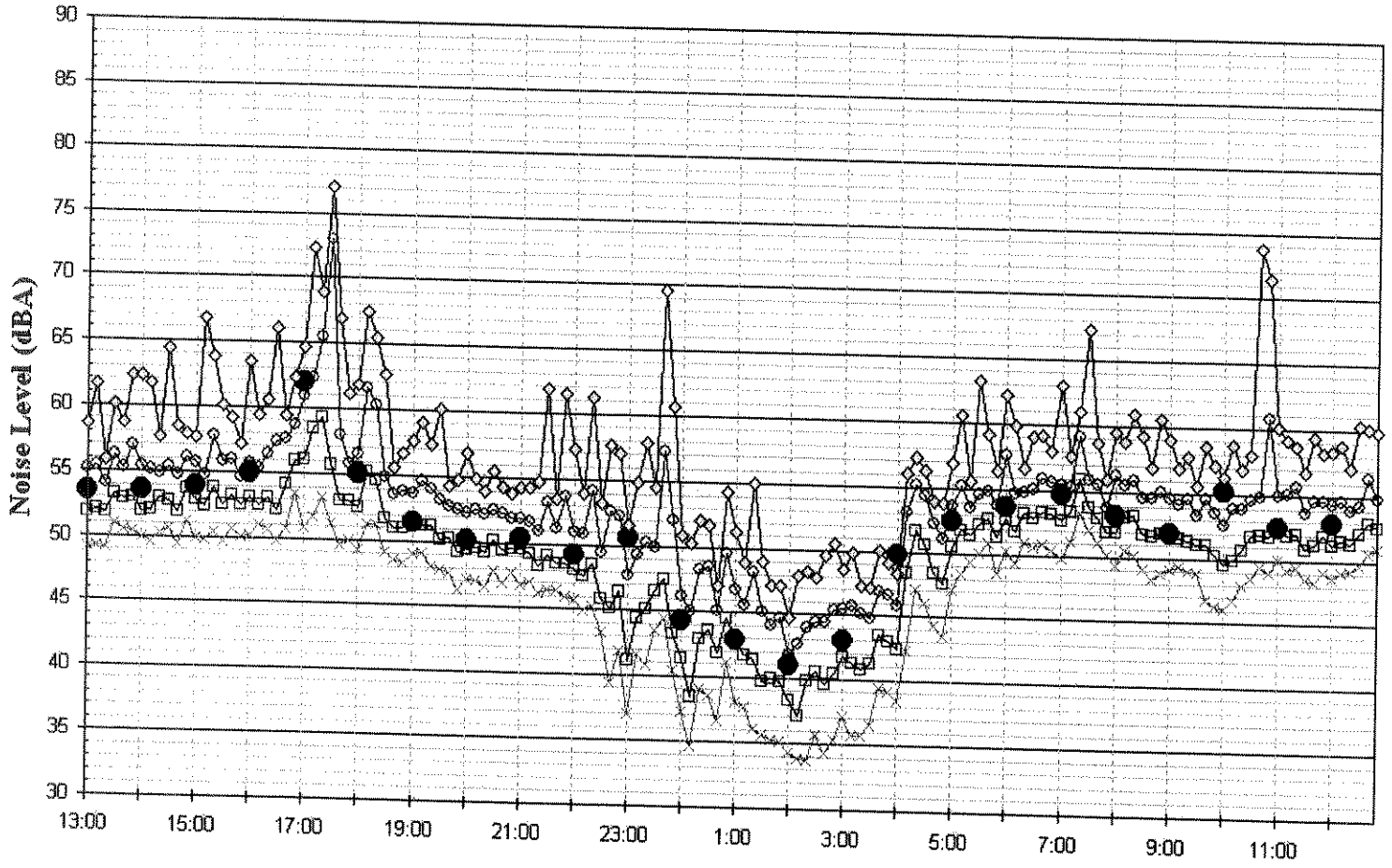
Figure 5

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 23-24, 2006



Ldn = 57 dBA

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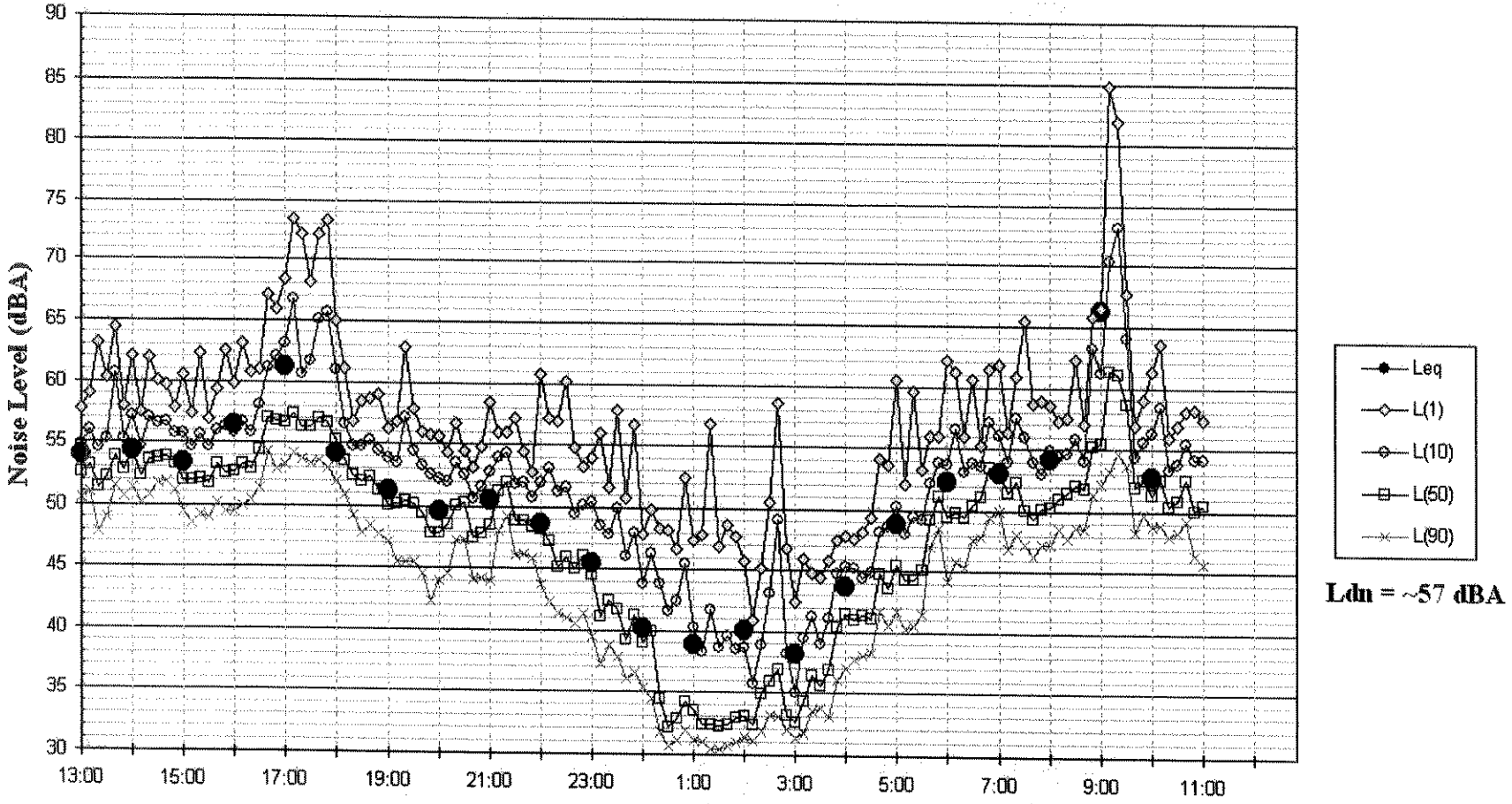
Figure 6

202

202

Noise Levels at LT-1
Property Line of Acalanes High School Near Park Lane
April 24-25, 2006



Ldn = ~57 dBA

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Figure 7